


RELEASE FOR CONSTRUCTION
 AS NOTED ON PLANS REVIEW
 DEVELOPMENT SERVICES
 LEE'S SUMMIT, MISSOURI
 01/30/2023 4:56:50

NEW PHOTOVOLTAIC ROOF MOUNTED SYSTEM - 6.40 KW DC/4.64 KW AC

2013 NE BLUESTONE DR, LEE'S SUMMIT, MO 64064

CONTRACTOR



THE SOLAR GUYS

6114 MO-9, PARKVILLE,
MISSOURI, 64152

PHONE - (816) 708-5556

NEW PV SYSTEM SPECIFICATIONS
 SYSTEM SIZE: DC SIZE: 6.400 KW DC-(STC)
 AC SIZE: 4.640 KW AC
 MODULE: (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400
 INVERTER: (16) ENPHASE IQ8PLUS-72-2-US

APPLICABLE CODES
 ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
 2018 INTERNATIONAL BUILDING CODE
 2018 INTERNATIONAL RESIDENTIAL CODE
 2018 INTERNATIONAL EXISTING BUILDING CODE
 2018 INTERNATIONAL FIRE CODE
 2017 NATIONAL ELECTRICAL CODE
 AS ADOPTED BY CITY OF LEE'S SUMMIT

DESIGN CRITERIA
 ROOF SURFACE TYPE: COMPOSITE SHINGLE
 ROOF FRAMING: 2"X4" TRUSS @ 24" OC
 BUILDING STORY: ONE STORY
 GROUND SNOW LOAD: 20 PSF
 WIND SPEED: 115 MPH
 WIND EXPOSURE: B
 RISK CATEGORY: II

PROJECT NOTES
 1.1.1 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE RELEVANT YEAR OF THE NATIONAL ELECTRIC CODE (NEC), ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
 1.1.2 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND THE PV SYSTEM MUST BE INSPECTED PRIOR TO OPERATION
 1.1.3 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC AND OTHER GOVERNING CODES
 1.1.4 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

SCOPE OF WORK
 1.2.1 CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTION OF EXISTING ONSITE CONDITIONS TO DESIGN, SPECIFY, AND INSTALL THE ROOF-MOUNTED PHOTOVOLTAIC SYSTEM DETAILED IN THIS DOCUMENT

VISIBLE, LOCKABLE, & LABELED AC DISCONNECT LOCATED WITHIN 10 FEET OF UTILITY METER.

(E) UTILITY METER (UNDERGROUND SERVICE)
 METER #: 24 020 588

(E) 200A MAIN SERVICE PANEL WITH (E) 200A MAIN BREAKER (INSIDE GARAGE)

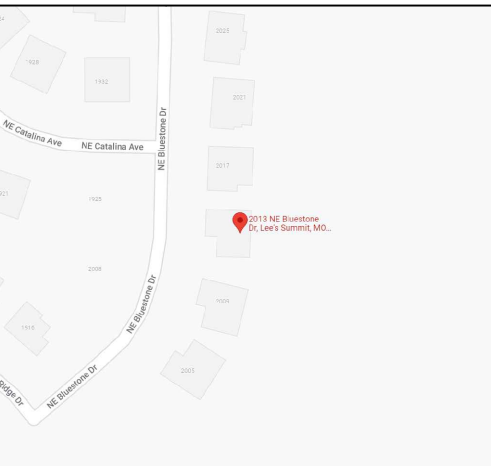
LEGEND
 - - - - - PROPERTY LINE
 ○ ○ ○ ○ ○ FENCE LINE

SHEET INDEX

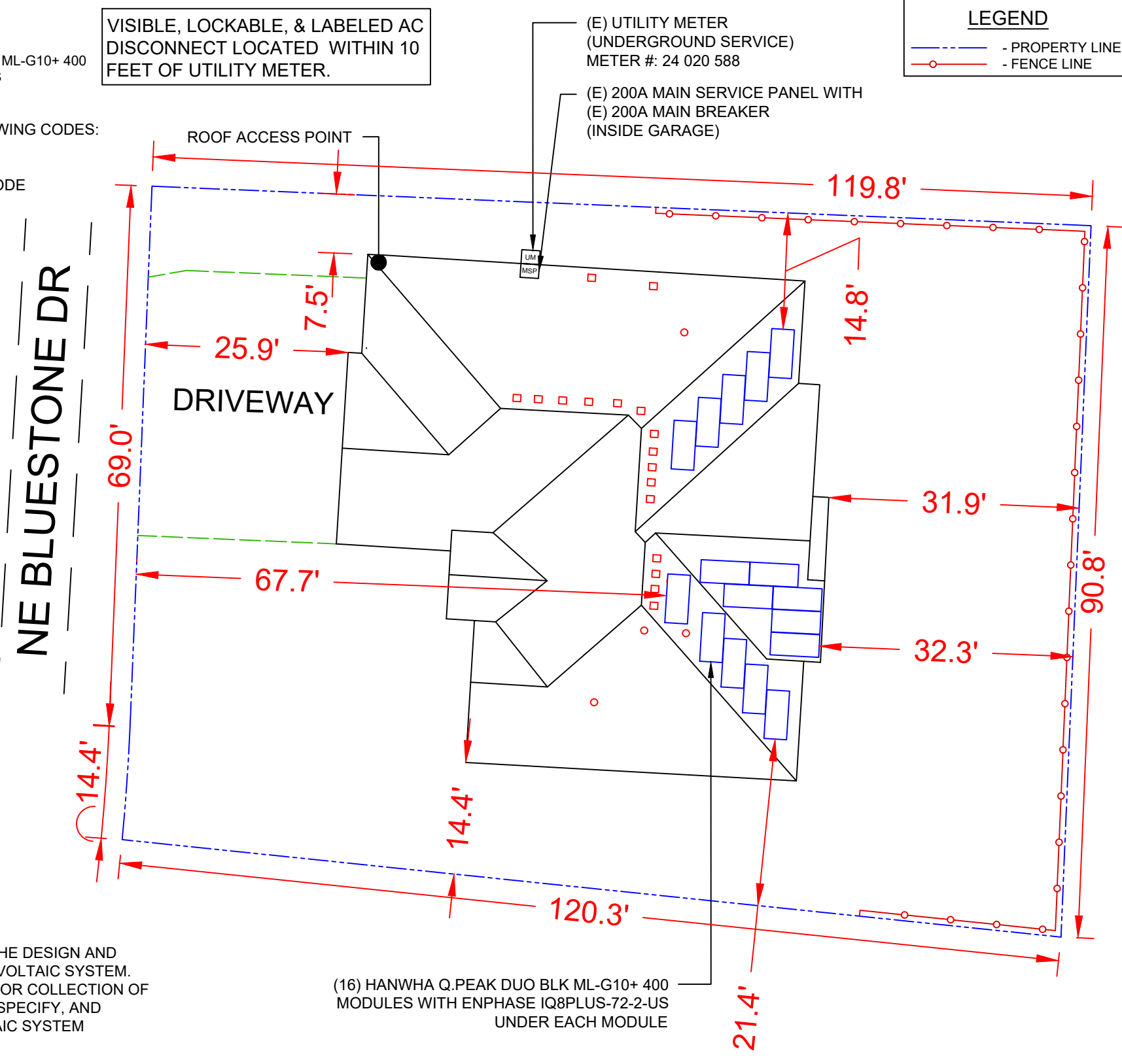
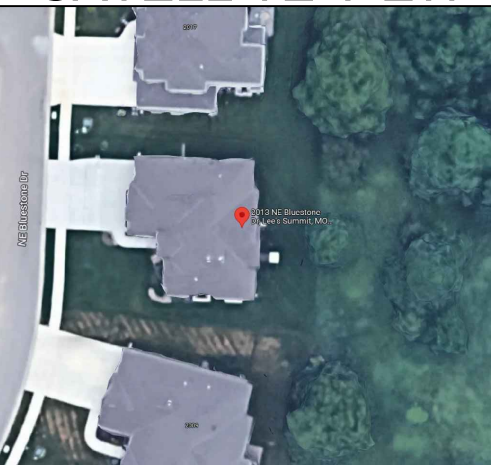
PV-01	COVER PAGE
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NOTES:
 1. ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.
 2. STRUCTURES, PATIO COVERS, AND/OR ADDITIONS BUILT WITHOUT PERMITS TO BE RESOLVED BY A SEPARATE PERMIT.

VICINITY MAP



SATELLITE VIEW



(16) HANWHA Q.PEAK DUO BLK ML-G10+ 400 MODULES WITH ENPHASE IQ8PLUS-72-2-US UNDER EACH MODULE


1
PROPERTY PLAN
 SCALE: 1/16" = 1'-0"

PROJECT NAME & ADDRESS

JUSTIN WATKINS
 2013 NE BLUESTONE DR,
 LEE'S SUMMIT, MO 64064
 APN #: 4240004160000000
 METER #: 24 020 588
 AHJ: CITY OF LEE'S SUMMIT
 UTILITY: EVERGY- MO METRO

SYSTEM DETAILS

DC SIZE: 6.400 KW DC-(STC)
 AC SIZE: 4.640 KW AC
 (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400
 (16) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE

COVER PAGE

DRAWN DATE: 1/6/2023

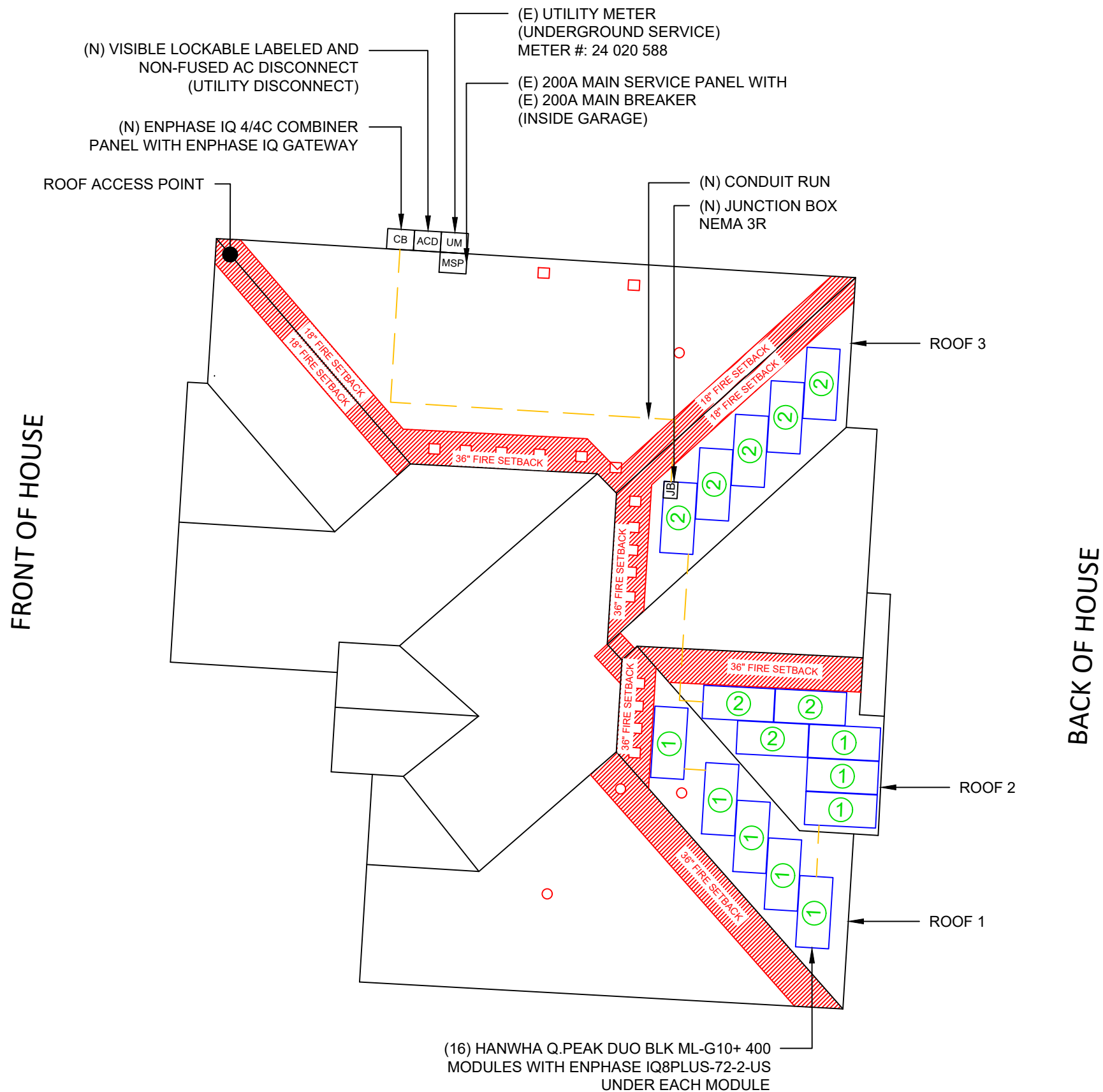
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PV-01

RELEASE FOR CONSTRUCTION
 AS VISIBLE LOCKABLE
 DEVELOPMENT SERVICES
 LEE'S SUMMIT, MISSOURI
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LABELLED AC
 DISCONNECT LOCATED WITHIN 10
 FEET OF UTILITY METER.



LEGEND

- CONDUIT RUN
- JB - JUNCTION BOX
- ☒ - SKYLIGHT (ROOF OBSTRUCTION)
- ☒ - CHIMNEY (ROOF OBSTRUCTION)
- □ - VENT, ATTIC FAN (ROOF OBSTRUCTION)
- - (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400 MODULES WITH ENPHASE IQ8PLUS-72-2-US MICROINVERTERS UNDER EACH MODULE

PLAN VIEW TOTAL ROOF AREA: 3374.54 FT²
 TOTAL PV ARRAY AREA: 340.59 FT²
 TOTAL % OF ROOF COVERED BY PV: 10.09%

NOTE:
 TO AVOID ADDITIONAL TEMPERATURE DERATE CORRECTIONS, CONDUIT MUST BE A MINIMUM OF 7/8" ABOVE THE ROOF SURFACE (EXTERIOR) OR 18" BELOW ROOF THROUGH ATTIC (INTERIOR).

ROOF SECTION(S)

ROOF	SLOPE	AZIMUTH	MODULE QTY	TRUSS	SURFACE TYPE
ROOF 1	- 33°	- 94°	- 5	- 2"X4" @ 24" O.C.	- COMPOSITE SHINGLE
ROOF 2	- 33°	- 183°	- 6	- 2"X4" @ 24" O.C.	- COMPOSITE SHINGLE
ROOF 3	- 33°	- 94°	- 5	- 2"X4" @ 24" O.C.	- COMPOSITE SHINGLE

PV CIRCUITS

- ① - MODULE STRING
- ② - MODULE STRING

CONTRACTOR



THE SOLAR GUYS

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REV	DESCRIPTION	DATE

**SHEET TITLE
 ROOF &
 EQUIPMENT PLAN**

DRAWN DATE	1/6/2023
DRAWN BY	SM

SHEET NUMBER

PV-02

RELEASE FOR CONSTRUCTION
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POINT LOAD CALCULATIONS	
MODULE TYPE	HANWHA Q.PEAK DUO BLK ML-G10+ 400
MODULE WEIGHT	51.8 LBS
NUMBER OF MODULES	16
TOTAL WEIGHT OF MODULES	828.80 LBS
TYPE OF RACKING	IRONRIDGE XR10
DISTRIBUTED WEIGHT OF RACKING	0.5 PSF
TOTAL WEIGHT OF ARRAY	999.09 LBS
TYPE OF ATTACHMENT	SUNMODO NANO MOUNT
NUMBER OF ATTACHMENTS	64
POINT LOAD AT EACH ATTACHMENT	13.12 LBS
AREA OF MODULE	21.29 SQFT.
TOTAL ARRAY AREA	340.59 SQFT.
DISTRIBUTED LOAD	2.50 PSF
TOTAL PLAN VIEW ROOF AREA	3374.54 SQFT.
PERCENTAGE OF TOTAL ROOF COVERED BY ARRAY	10.09 %


ROOF SECTION(S)	
ROOF 1	SLOPE - 33° AZIMUTH - 94° MODULE QTY - 5 TRUSS - 2"X4" @ 24" O.C. SURFACE TYPE - COMPOSITE SHINGLE
ROOF 2	SLOPE - 33° AZIMUTH - 183° MODULE QTY - 6 TRUSS - 2"X4" @ 24" O.C. SURFACE TYPE - COMPOSITE SHINGLE
ROOF 3	SLOPE - 33° AZIMUTH - 94° MODULE QTY - 5 TRUSS - 2"X4" @ 24" O.C. SURFACE TYPE - COMPOSITE SHINGLE

LEGEND

- - ATTACHMENT POINTS
- - RAIL
- - CLAMP
- - - - TRUSS

TOTAL ATTACHMENT POINTS - 64

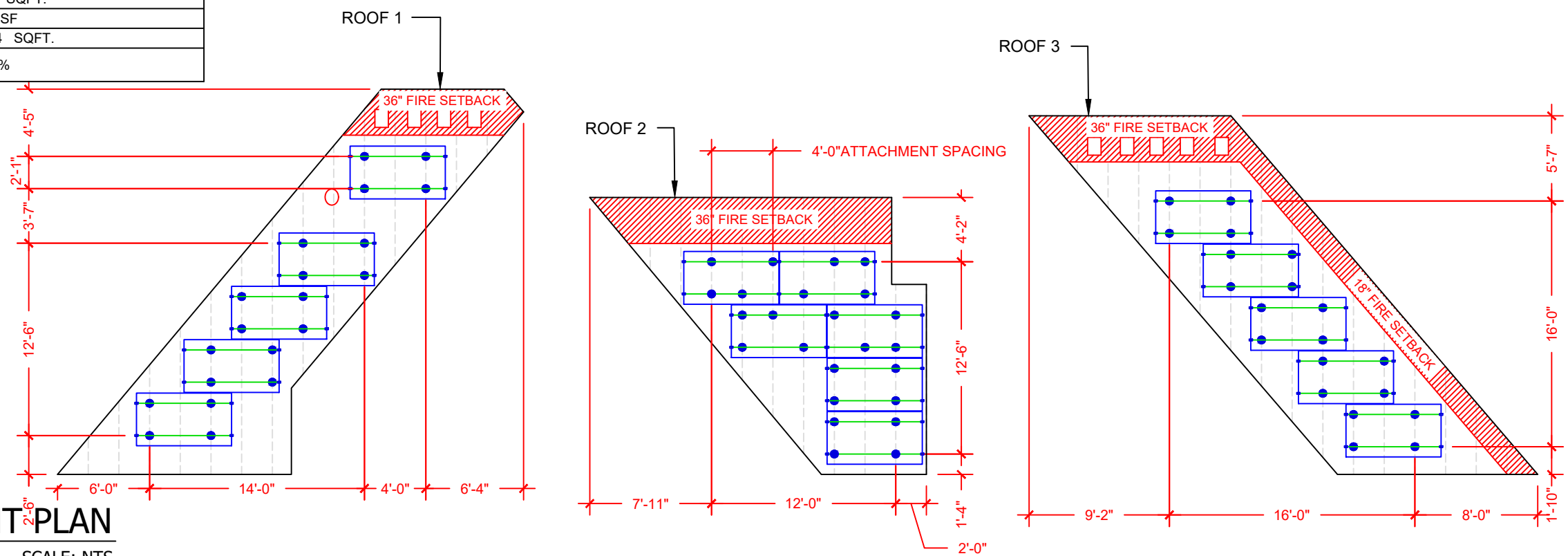
CONTRACTOR



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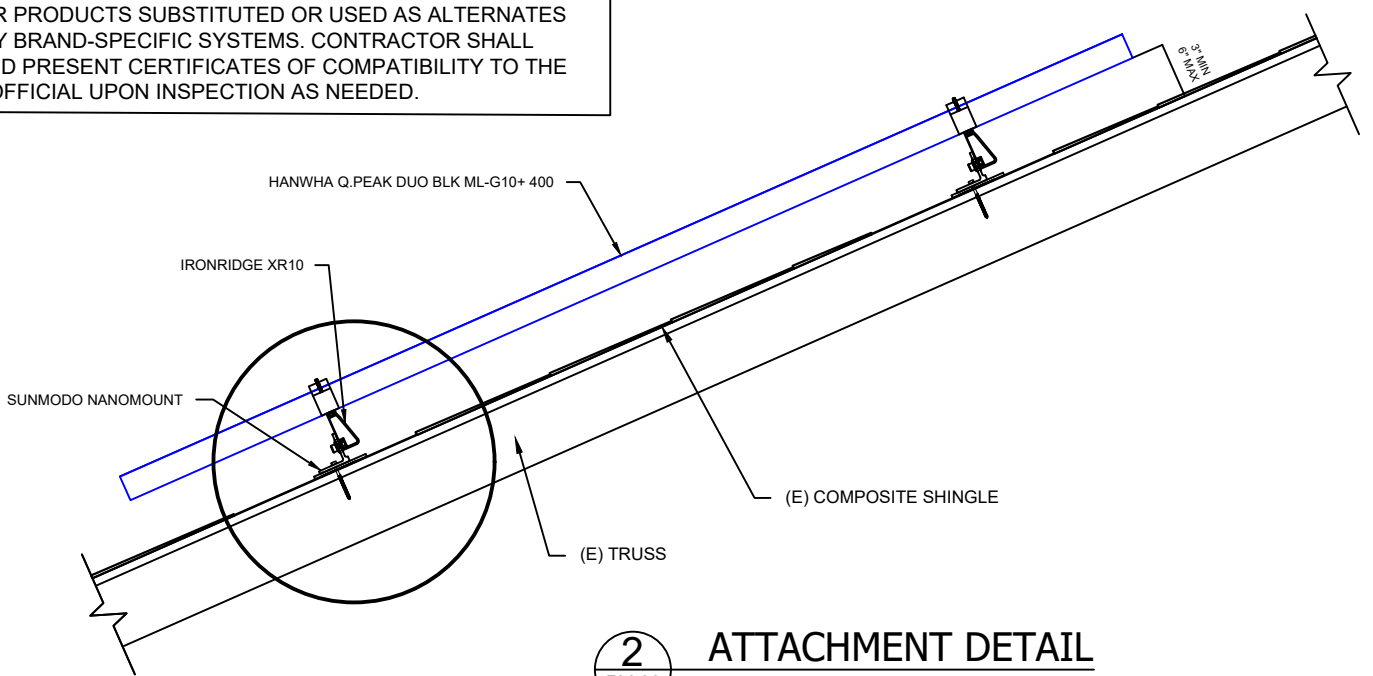
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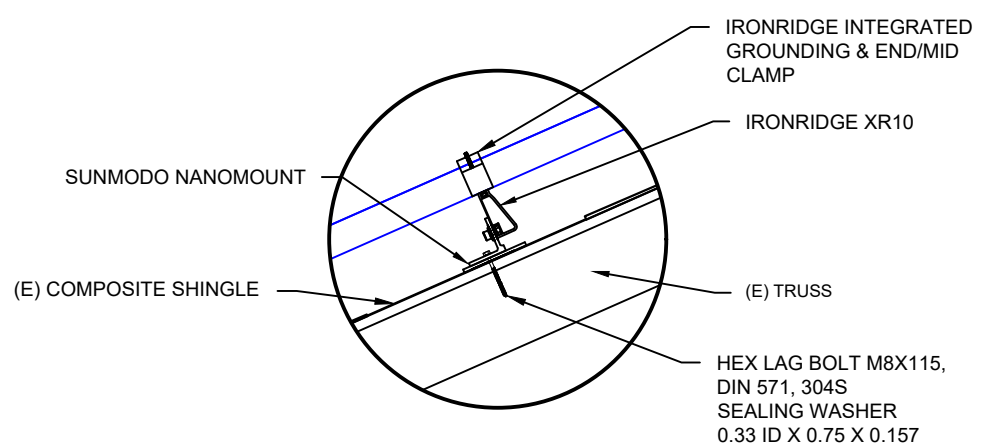


1 ATTACHMENT PLAN
 PV-03 SCALE: NTS

NOTE: CONTRACTOR/INSTALLER TO VERIFY COMPATIBILITY OF ANY BRANDS OR PRODUCTS SUBSTITUTED OR USED AS ALTERNATES WITHIN ANY BRAND-SPECIFIC SYSTEMS. CONTRACTOR SHALL SUPPLY AND PRESENT CERTIFICATES OF COMPATIBILITY TO THE BUILDING OFFICIAL UPON INSPECTION AS NEEDED.



2 ATTACHMENT DETAIL
 PV-03 Scale: NTS



3 ENLARGED VIEW
 PV-03 Scale: NTS

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REVISIONS

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SHEET TITLE
ATTACHMENT PLAN & DETAILS

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SHEET NUMBER
PV-03

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SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA Q.PEAK DUO BLK ML-G10+ 400
VMP	37.13V
IMP	10.77A
VOC	45.30V
ISC	11.14A
TEMP. COEFF. VOC	-0.27%/K
MODULE DIMENSION	74.4" x 41.2" x 1.57" (In Inch)

MICROINVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE IQ8PLUS-72-2-US
MIN/MAX DC VOLT RATING	30V MIN/ 58V MAX
MAX INPUT POWER	235W-440W
NOMINAL AC VOLTAGE RATING	240V/ 211-264V
MAX AC CURRENT	1.21A
MAX MODULES PER STRING	13 (SINGLE PHASE)
MAX OUTPUT POWER	290W

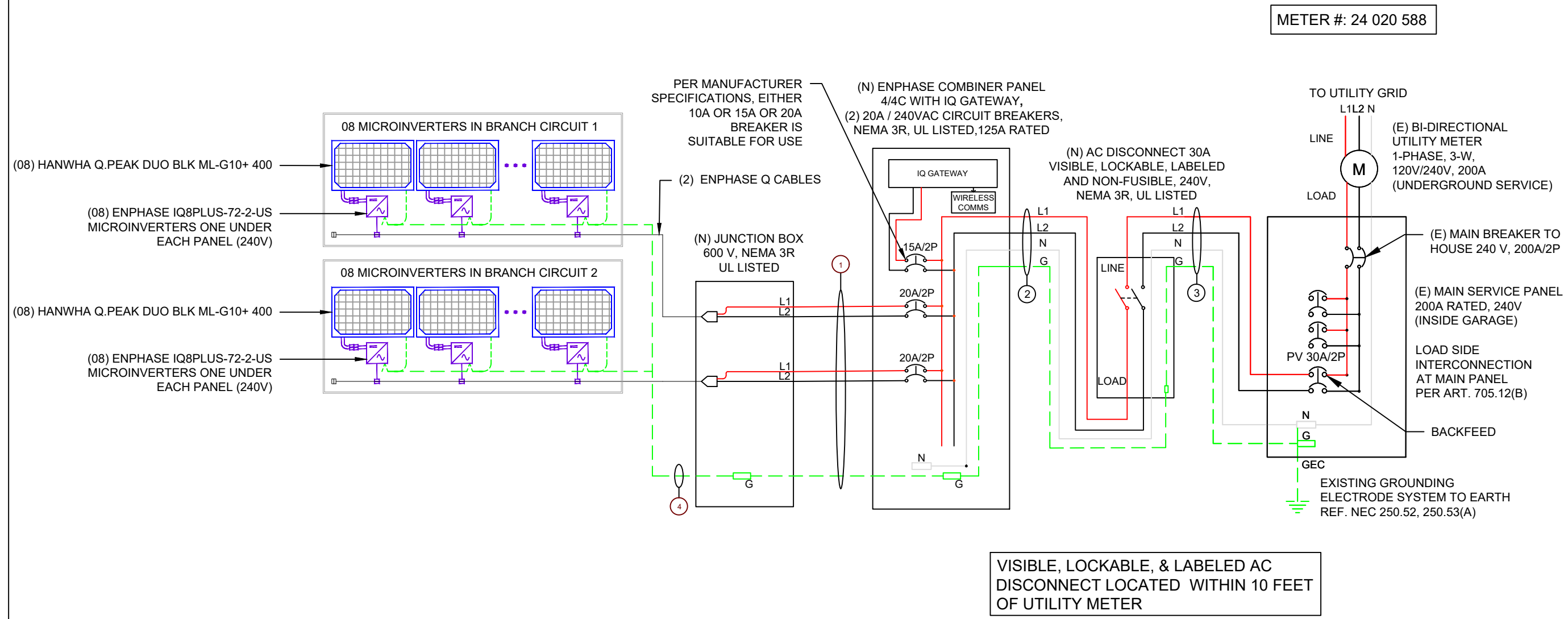
AMBIENT TEMPERATURE SPECIFICATIONS	
RECORD LOW TEMP	-19°C
AMBIENT TEMP (HIGH TEMP 2% AVG.)	35°C
CONDUIT HEIGHT	7/8"
CONDUCTOR TEMPERATURE RATE	90°C

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THREE LINE DIAGRAM

DESCRIPTION	FORMULA	RESULT
PV OVERCURRENT PROTECTION NEC 690.9(B)	TOTAL INVERTER OUTPUT CURRENT x 1.25 = (16 x 1.21)A x 1.25	24.20A (SELECTED PV BREAKER = 30A)
120% RULE FOR BACKFEED BREAKER NEC 705.12	BUS BAR RATING x 1.2 - MCB RATING = MAX ALLOWABLE PV BREAKER 200A x 1.2 - 200A = 40A	SELECTED PV BREAKER <= MAX ALLOWABLE PV BREAKER 30A <= 40A

WIRE ID	EXPECTED WIRE TEMP (°C)	TEMP DERATE (90 °C)	QTY OF CURRENT CARRYING CONDUCTORS	CONDUIT FILL DERATE	CONDUIT SIZE & TYPE	WIRE GAUGE & TYPE	CONDUCTOR AMPACITY @ 90°C (A)	CONDUCTOR AMPACITY @ 75°C (A)	REQUIRED CIRCUIT CONDUCTOR AMPACITY (A)	ADJUSTED CONDUCTOR AMPACITY @ 90 °C (A)	NEUTRAL CONDUCTOR SIZE & TYPE	GROUND WIRE SIZE & TYPE
1	35	0.96	4	0.8	3/4" EMT	#10 THWN-2	40	35	12.10	30.72	NONE	#10 THWN-2
2	35	0.96	2	1	3/4" EMT	#10 THWN-2	40	35	24.20	38.4	#10 THWN-2	#10 THWN-2
3	35	0.96	2	1	3/4" EMT	#10 THWN-2	40	35	24.20	38.4	#10 THWN-2	#10 THWN-2
4												#6 SBC

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PV-04

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GENERAL NOTES

SITE NOTES

- 2.1.1 A LADDER WILL BE IN PLACE FOR INSPECTION IN ACCORDANCE WITH OSHA REGULATIONS.
- 2.1.2 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- 2.1.3 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- 2.1.4 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED IN ACCORDANCE WITH SECTION NEC 110.26.
- 2.1.5 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

EQUIPMENT LOCATIONS

- 2.2.1 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS IN ACCORDANCE WITH NEC 110.26.
- 2.2.2 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).
- 2.2.3 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES IN ACCORDANCE WITH NEC 690.34.
- 2.2.4 ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
- 2.2.5 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL IN ACCORDANCE WITH NEC APPLICABLE CODES.
- 2.2.6 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

STRUCTURAL NOTES

- 2.3.1 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED IN ACCORDANCE WITH THE CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, IN ACCORDANCE WITH RAIL MANUFACTURER'S INSTALLATION PRACTICES.
- 2.3.2 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
- 2.3.3 ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
- 2.3.4 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER OR PROFESSIONAL ENGINEERING GUIDANCE.
- 2.3.5 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

WIRING & CONDUIT NOTES

- 2.4.1 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
- 2.4.2 CONDUCTORS SIZED IN ACCORDANCE WITH THE NEC
- 2.4.4 AC CONDUCTORS TO BE COLORED OR MARKED PER NEC

GROUNDING NOTES

- 2.5.1 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
- 2.5.2 PV EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH NEC 690.43 AND NEC TABLE 250.122.
- 2.5.3 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A).
- 2.5.4 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC 690.45 AND INVERTER MANUFACTURER'S INSTALLATION PRACTICES
- 2.5.5 EACH MODULE WILL BE GROUNDED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.
- 2.5.6 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
- 2.5.7 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER PER NEC 250.119
- 2.5.8 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED IN ACCORDANCE WITH NEC 250, NEC 690.47 AND THE AHJ.
- 2.5.9 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS


DISCONNECTION AND OVERCURRENT PROTECTION NOTES

- 2.6.1 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
- 2.6.2 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
- 2.6.3 PV SYSTEM CIRCUITS INSTALLED ON OR IN HABITABLE BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12
- 2.6.4 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
- 2.6.5 INVERTER ON-GRID BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OR GROUPED FUSE DISCONNECT(S) IN ACCORDANCE WITH NEC 110.3(B).
- 2.6.6 IF REQUIRED BY THE AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION IN ACCORDANCE WITH NEC 690.11 AND UL1699B.

INTERCONNECTION NOTES

- 2.7.1 LOAD SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.12.
- 2.7.2 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120 PERCENT OF BUSBAR RATING PER NEC 705.12.
- 2.7.3 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD IN ACCORDANCE WITH NEC 705.12.
- 2.7.4 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT PROTECTION DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE MAIN OVERCURRENT PROTECTION DEVICE MAY BE EXCLUDED IN ACCORDANCE WITH NEC 705.12.
- 2.7.5 FEEDER TAP INTERCONNECTION (LOAD SIDE) IN ACCORDANCE WITH NEC 705.12.
- 2.7.6 SUPPLY SIDE TAP INTERCONNECTION IN ACCORDANCE WITH TO NEC 705.12 WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42.
- 2.7.7 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING PER NEC 705.12.

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PV-05

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WARNING
 TERMINALS ON THE LINE AND
 LOAD SIDES MAY BE ENERGIZED
 IN THE OPEN POSITION

LABEL LOCATION: COMBINER PANEL, AC
 DISCONNECT, POINT OF INTERCONNECTION
 PER CODE(S): NEC 690.13(B)

WARNING
 TURN OFF PHOTOVOLTAIC AC
 DISCONNECT PRIOR TO
 WORKING INSIDE PANEL

LABEL LOCATION: COMBINER PANEL(S), MAIN SERVICE DISCONNECT
 PER CODE(S): NEC 110.27(C), OSHA 1910.145(f)(7)

**WARNING: PHOTOVOLTAIC
 POWER SOURCE**

LABEL LOCATION: EMT, CONDUIT RACEWAY, CABLE TRAYS
 PER CODE: NEC 690.31(G)(3-4)

**PHOTOVOLTAIC SYSTEM AC DISCONNECT
 RATED AC OPERATING CURRENT 19.36 AMPS
 AC NOMINAL OPERATING VOLTAGE 240 VOLTS**

LABEL LOCATION: POINT OF INTERCONNECTION
 PER CODE: NEC 690.54

**PV SYSTEM
 DISCONNECT**

LABEL LOCATION: AC DISCONNECT
 PER CODE: NEC 690.13(B)

**DO NOT DISCONNECT UNDER
 LOAD**

LABEL LOCATION: MAIN SERVICE DISCONNECT
 PER CODE: NEC 690.15(C) & NEC 690.33(E)(2)

**WARNING DUAL POWER SOURCE
 SECOND SOURCE IS PHOTOVOLTAIC SYSTEM**

LABEL LOCATION: MAIN SERVICE DISCONNECT
 PER CODE: NEC 705.12(B)(3-4), NEC 690.59

WARNING
 THIS EQUIPMENT FED BY MULTIPLE SOURCES,
 TOTAL RATING OF ALL OVERCURRENT DEVICES,
 EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE,
 SHALL NOT EXCEED AMPACITY OF BUSBAR.

LABEL LOCATION: POINT OF INTERCONNECTION, COMBINER PANEL
 PER CODE: NEC 705.12(B)(2)(3)(c)

WARNING
 POWER SOURCE OUTPUT
 CONNECTION. DO NOT RELOCATE
 THIS OVERCURRENT DEVICE.

LABEL LOCATION: MAIN SERVICE DISCONNECT,
 POINT OF INTERCONNECTION
 PER CODE: 705.12(B)(2)(3)(b)

**MAIN PHOTOVOLTAIC
 SYSTEM DISCONNECT**

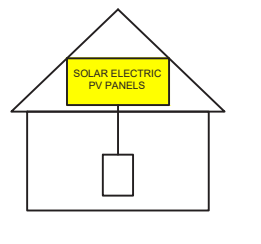
LABEL LOCATION: MAIN SERVICE DISCONNECT, UTILITY METER
 PER CODE: NEC 690.13(B)

**RAPID SHUTDOWN SWITCH
 FOR SOLAR PV SYSTEM**

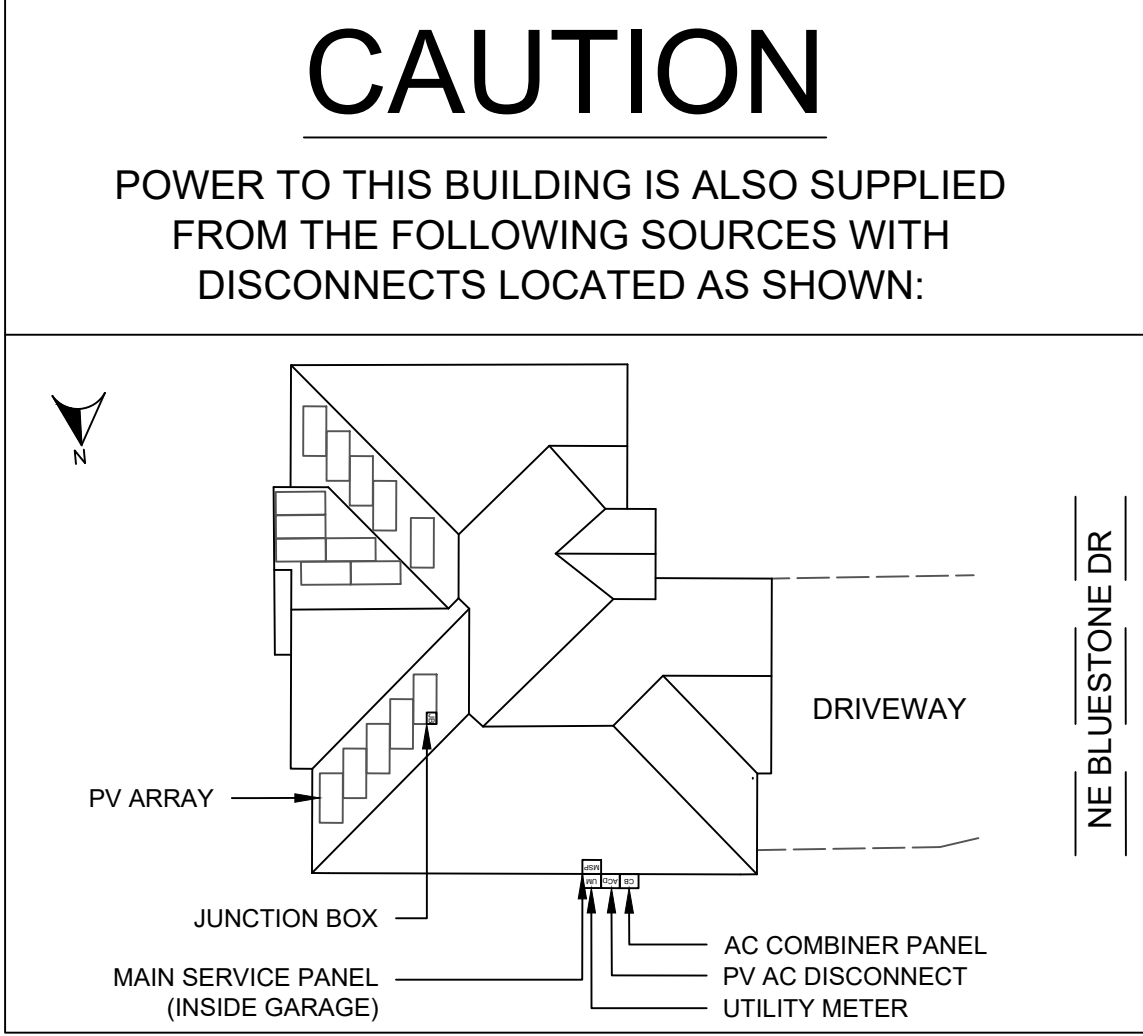
LABEL LOCATION: RSD INITIATION DEVICE, AC DISCONNECT
 PER CODE: NEC 690.56(C)(3)

**SOLAR PV SYSTEM EQUIPPED
 WITH RAPID SHUTDOWN**

TURN RAPID SHUTDOWN
 SWITCH TO THE
 "OFF" POSITION TO
 SHUTDOWN PV SYSTEM
 AND REDUCE
 SHOCK HAZARD
 IN ARRAY



LABEL LOCATION: MAIN SERVICE DISCONNECT
 PER CODE: NEC 690.56(C)(1)(a)



CONTRACTOR

THE SOLAR GUYS
 6114 MO-9, PARKVILLE,
 MISSOURI, 64152
 PHONE - (816) 708-5556

PROJECT NAME & ADDRESS

JUSTIN WATKINS
 2013 NE BLUESTONE DR,
 LEE'S SUMMIT, MO 64064
 APN #: 42400041600000000
 METER #: 24 020 588
 AHJ: CITY OF LEE'S SUMMIT
 UTILITY: EVERGY- MO METRO

SYSTEM DETAILS

DC SIZE: 6.400 KW DC-(STC)
 AC SIZE: 4.640 KW AC
 (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400
 (16) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

**SHEET TITLE
 WARNING LABELS**

DRAWN DATE	1/6/2023
DRAWN BY	SM

**SHEET NUMBER
 PV-06**

RELEASE FOR CONSTRUCTION
 AS NOTED ON PLANS REVIEW
 DEVELOPMENT SERVICES
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Q.PEAK DUO BLK ML-G10+ SERIES



385-405 Wp | 132 Cells
 20.5% Maximum Module Efficiency

MODEL Q.PEAK DUO BLK ML-G10+/TS



Breaking the 20% efficiency barrier

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.5%.



A reliable investment

Inclusive 25-year product warranty and 25-year linear performance warranty¹.



Enduring high performance

Long-term yield security with Anti LeTID Technology, Anti PID Technology² and Hot-Spot Protect.



Innovative all-weather technology

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



Zep compatible™ frame design

High-tech black Zep Compatible™ frame, for improved aesthetics, easy installation and increased safety.



The most thorough testing programme in the industry

Qcells is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

¹ See data sheet on rear for further information.

² APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96 h)

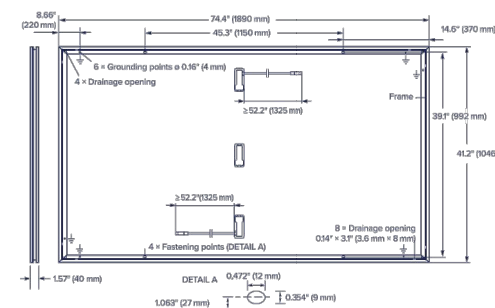
The ideal solution for:



Q.PEAK DUO BLK ML-G10+ SERIES

Mechanical Specification

Format	74.4 in × 41.2 in × 1.57 in (including frame) (1890 mm × 1046 mm × 40 mm)
Weight	51.8 lbs (23.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 52.2 in (1325 mm), (-) ≥ 52.2 in (1325 mm)
Connector	Stäubli MC4; IP68



Electrical Characteristics

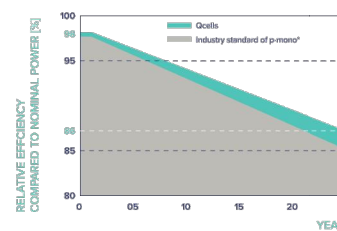
POWER CLASS		385	390	395	400	405	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W/-0 W)							
Minimum	Power at MPP ¹	P _{MPP} [W]	385	390	395	400	405
	Short Circuit Current ¹	I _{SC} [A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage ¹	V _{OC} [V]	45.19	45.23	45.27	45.3	45.34
	Current at MPP	I _{MPP} [A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V _{MPP} [V]	36.36	36.62	36.88	37.13	37.39
	Efficiency ¹	η [%]	≥ 19.5	≥ 19.7	≥ 20.0	≥ 20.2	≥ 20.5

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²

Minimum	Power at MPP	P _{MPP} [W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I _{SC} [A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V _{OC} [V]	42.62	42.65	42.69	42.72	42.76
	Current at MPP	I _{MPP} [A]	8.35	8.41	8.46	8.51	8.57
	Voltage at MPP	V _{MPP} [V]	34.59	34.81	35.03	35.25	35.46

¹ Measurement tolerances P_{MPP} ± 3%; I_{SC}; V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • ² 800 W/m², NMOT, spectrum AM 1.5

Qcells PERFORMANCE WARRANTY

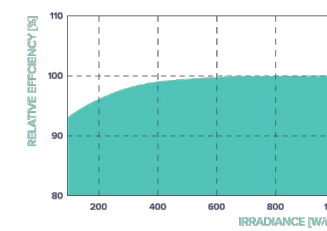


At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Qcells sales organisation of your respective country.

^{*} Standard terms of guarantee for the 5 PV companies with the highest production capacity in 2021 (February 2021)

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α [%/K]	+0.04	Temperature Coefficient of V _{OC}	β [%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°F]	109 ± 5.4 (43 ± 3 °C)

Properties for System Design

Maximum System Voltage	V _{sys} [V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI/UL 61730	TYPE 2
Max. Design Load, Push/Pull ^P	[lbs/ft ²]	85 (4080 Pa)/85 (4080 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push/Pull ^P	[lbs/ft ²]	128 (6120 Pa)/128 (6120 Pa)		

^P See Installation Manual

Qualifications and Certificates

UL 61730, CE-compliant, Quality Controlled PV, TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells)



Specifications subject to technical changes © Qcells Q.PEAK DUO BLK ML-G10+_TS_DA_385-405_2022-07_Rev01_NA

CONTRACTOR



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 (16) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE RESOURCE DOCUMENT

DRAWN DATE	1/6/2023
DRAWN BY	SM

SHEET NUMBER

R-01

Qcells pursues minimizing paper output in consideration of the global environment.

Note: Installation instructions must be followed. Contact our technical service for further information on approved installation of this product.
 Hanwha Q CELLS America Inc. 400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL: +1 949 748 59 96 | EMAIL: hq-enquiry@qcells.com | WEB: www.qcells.com





DATA SHEET



IQ8 and IQ8+ Microinverters

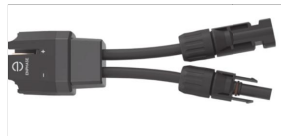
Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

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IQ8SP-DS-0002-01-EN-US-2022-08-10

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SB) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.

** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings ¹	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current ² [module lsc]	A	15	15
Overvoltage class DC port		II	II
DC port backfeed current	mA	0	0
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range ³	V	240 / 211	264
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	60
Extended frequency range	Hz	50 – 63	50 – 63
AC short circuit fault current over 3 cycles	Arms	2	2
Max units per 20 A (L-L) branch circuit ⁴		16	13
Total harmonic distortion		<5%	<5%
Overvoltage class AC port		III	III
AC port backfeed current	mA	30	30
Power factor setting		1.0	1.0
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	0.85 leading – 0.85 lagging
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	60
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
		CA Rule 21 (UL 1741-SB), UL 62109-1, UL1741/IEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01	
Certifications		This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility>

(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-08-10

CONTRACTOR



THE SOLAR GUYS

6114 MO-9, PARKVILLE,
 MISSOURI, 64152

PHONE - (816) 708-5556

PROJECT NAME & ADDRESS

JUSTIN WATKINS

2013 NE BLUESTONE DR,
 LEE'S SUMMIT, MO 64064
 APN #: 42400041600000000
 METER #: 24 020 588
 AHJ: CITY OF LEE'S SUMMIT
 UTILITY: EVERGY- MO METRO

SYSTEM DETAILS

DC SIZE: 6.400 KW DC-(STC)
 AC SIZE: 4.640 KW AC
 (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400
 (16) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE RESOURCE DOCUMENT

DRAWN DATE	1/6/2023
DRAWN BY	SM

SHEET NUMBER R-02

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Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C



X-IQ-AM1-240-4C

X-IQ-AM1-240-4



To learn more about Enphase offerings, visit enphase.com

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed



Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.

ACCESSORIES AND REPLACEMENT PARTS (not included, order separately)	
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.

ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers

MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> • 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)

COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit enphase.com

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CONTRACTOR

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REVISIONS		
REV	DESCRIPTION	DATE

SHEET TITLE RESOURCE DOCUMENT

DRAWN DATE	1/6/2023
DRAWN BY	SM

SHEET NUMBER
R-03

Tech Brief

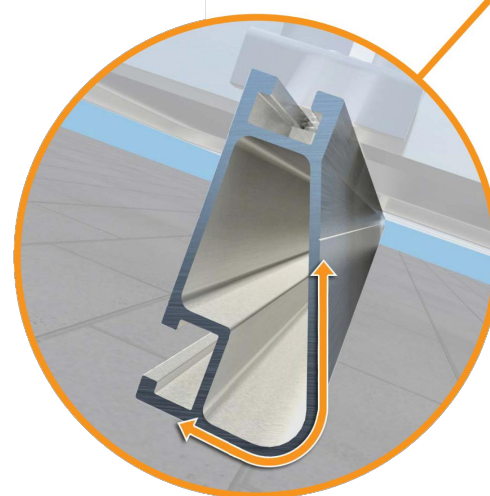
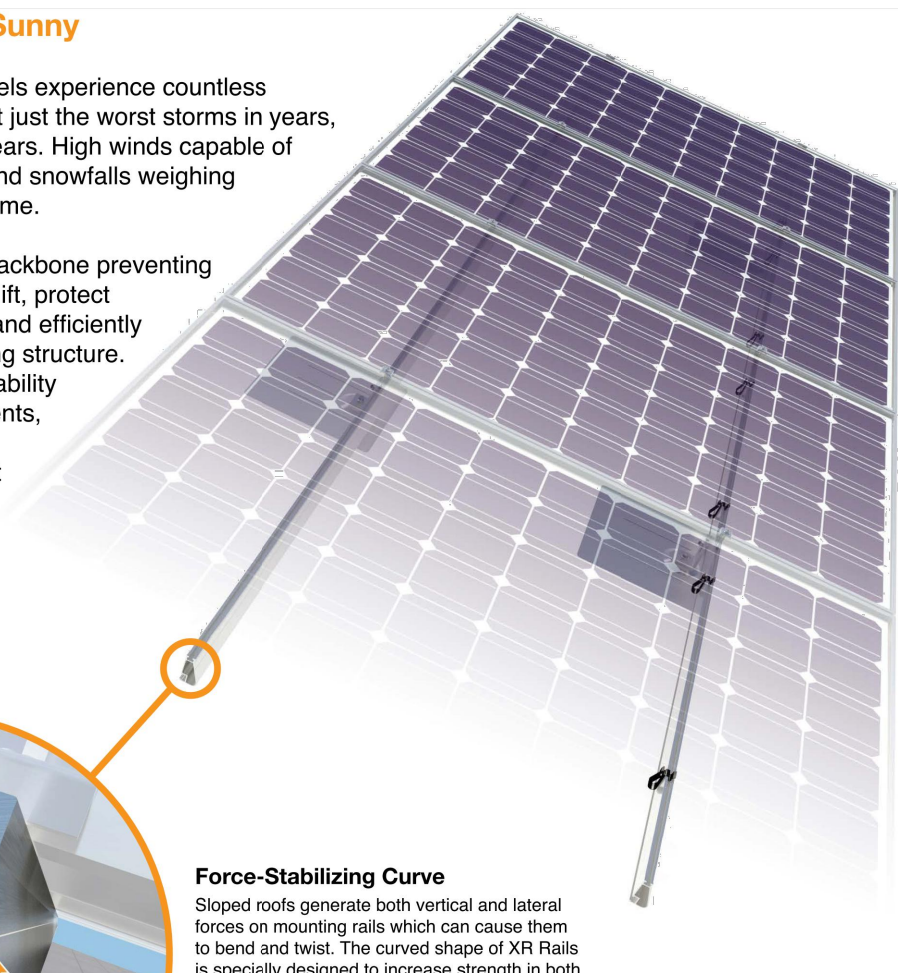


XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

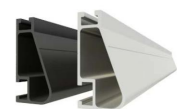
Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



XR10 Rail

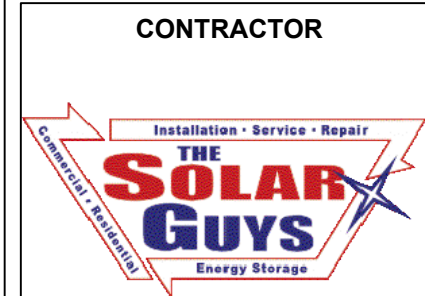
Cut Sheet

See Description / Length

Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.363 in ²
Section Modulus (X-axis)	0.136 in ³
Moment of Inertia (X-axis)	0.124 in ⁴
Moment of Inertia (Y-axis)	0.032 in ⁴
Torsional Constant	0.076 in ³
Polar Moment of Inertia	0.033 in ⁴

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-10-132A	XR-10-132B	XR10, Rail 132" (11 Feet)	6000-Series A aluminum	4.67 lbs.
XR-10-168A	XR-10-168B	XR10, Rail 168" (14 Feet)		5.95 lbs.
XR-10-204A	XR-10-204B	XR10, Rail 204" (17 Feet)		7.22 lbs.

v1.0



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SHEET TITLE RESOURCE DOCUMENT

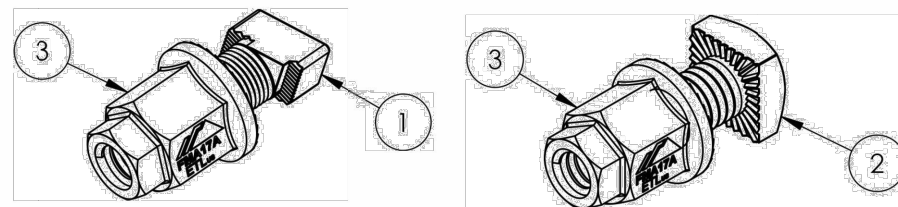
DRAWN DATE 1/6/2023
 DRAWN BY SM

SHEET NUMBER
 R-04

Cut Sheet



Bonding Hardware

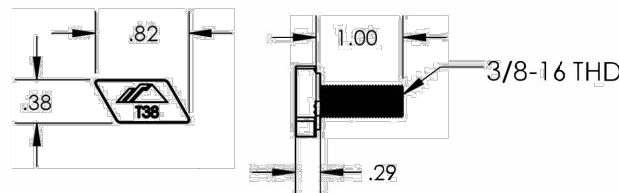


ITEM NO.	DESCRIPTION
1	BOLT, T CSTM, 3/8-16
2	BOLT, BONDING 3/8-16 SQ HEAD
3	NUT, BONDING STEP

BONDING HARDWARE

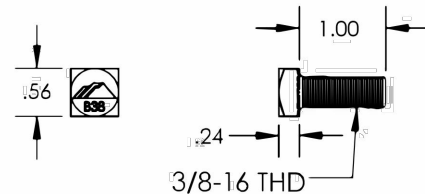
Part Number	Description
BHW-TB-02-A1	T-BOLT, BONDING HARDWARE
BHW-SQ-02-A1	SQJARE-BOLT, BONDING HARDWARE

1) BOLT, T CSTM, 3/8-16



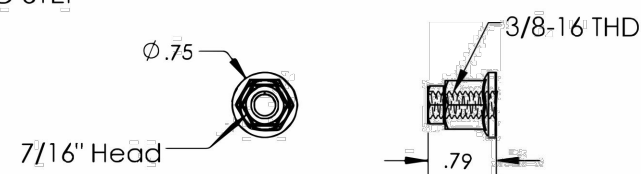
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

2) BOLT, BONDING 3/8-16 SQ HEAD



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) NUT, BONDING STEP



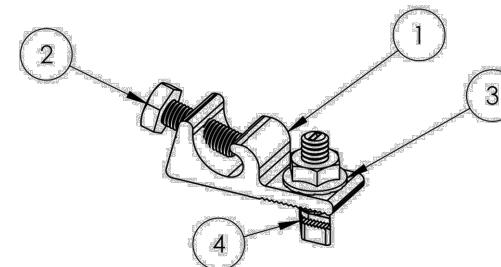
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.30

Cut Sheet



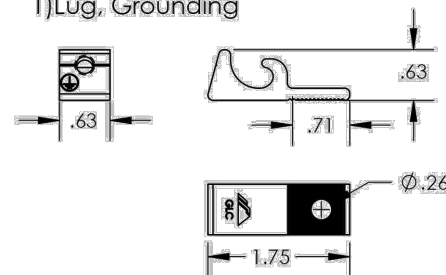
Grounding Lug



ITEM NO.	DESCRIPTION
1	LUG, GROUNDING, LAY-IN - LOW PROFILE
2	BOLT, 1/4-28 X .750" HEX CS SST
3	NUT, FLANGE HEX 1/4-20 SST
4	BOLT, T CSTM, 1/4-20 X 1.188" LOCK SS

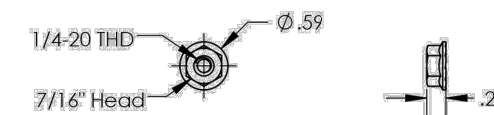
Part Number	Description	Wire Size Range (AWG)
XR-LUG-03-A1	GROUNDING LUG, LOW PROFILE	4-10

1) Lug, Grounding



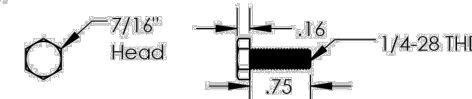
Property	Value
Material	Tin Plated Copper
Finish	Clear Matte

3) Nut, Flange Hex 1/4-20



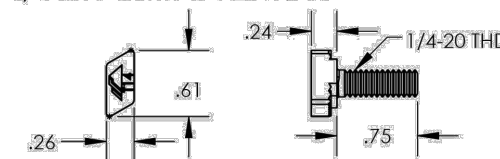
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

2) Bolt, 1/4-28 x .750 Hex



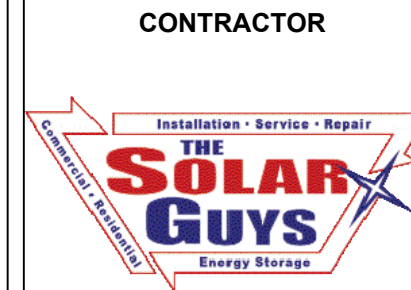
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

4) Bolt, T CSTM 1/4-20 x .750



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.10



THE SOLAR GUYS

6114 MO-9, PARKVILLE,
 MISSOURI, 64152

PHONE - (816) 708-5556

PROJECT NAME & ADDRESS

JUSTIN WATKINS

2013 NE BLUESTONE DR,
 LEE'S SUMMIT, MO 64064
 APN #: 42400041600000000
 METER #: 24 020 588
 AHJ: CITY OF LEE'S SUMMIT
 UTILITY: EVERGY- MO METRO

SYSTEM DETAILS

DC SIZE: 6.400 KW DC-(STC)
 AC SIZE: 4.640 KW AC
 (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400
 (16) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE RESOURCE DOCUMENT

DRAWN DATE	1/6/2023
DRAWN BY	SM

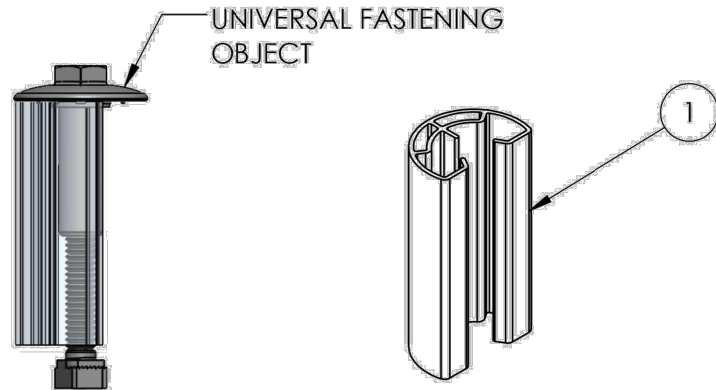
SHEET NUMBER

R-05

Cut Sheet



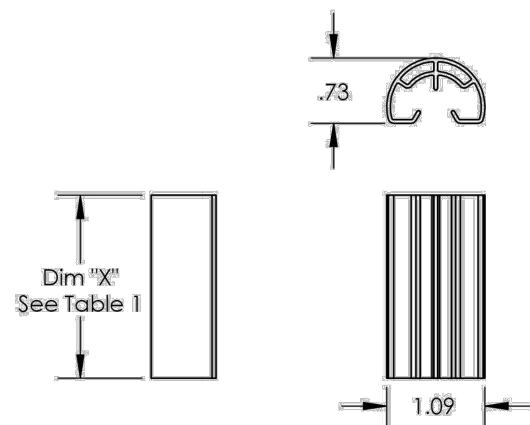
Stopper Sleeve



ITEM NO.	COMPONENT
1	STOPPER SLEEVE

TABLE 1: STOPPER SLEEVE PART NUMBERS AND HEIGHT

MILL PART NUMBER	BLACK PART NUMBER	HEIGHT "X" (mm)
UFO-STP-30MM-M1	UFO-STP-30MM-B1	30
UFO-STP-32MM-M1	UFO-STP-32MM-B1	32
UFO-STP-33MM-M1	UFO-STP-33MM-B1	33
UFO-STP-35MM-M1	UFO-STP-35MM-B1	35
UFO-STP-38MM-M1	UFO-STP-38MM-B1	38
UFO-STP-40MM-M1	UFO-STP-40MM-B1	40
UFO-STP-42MM-M1	UFO-STP-42MM-B1	42
UFO-STP-46MM-M1	UFO-STP-46MM-B1	46



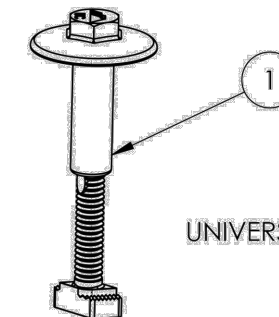
Property	Value
Material	6000 Series Aluminum
Finish	Mill or Black

v1.30

Cut Sheet

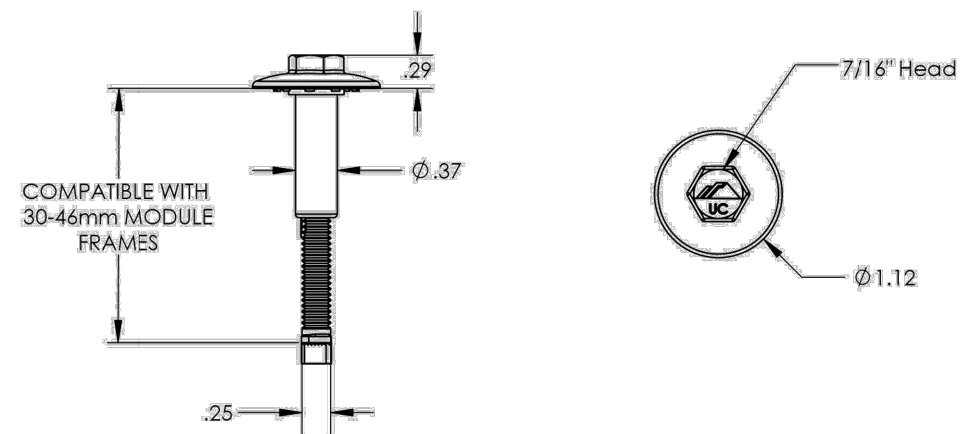


Universal Fastening Object



UNIVERSAL FASTENING OBJECT

ITEM NO.	DESCRIPTION
UFO-CL-01-A1	UNIVERSAL MODULE CLAMP, CLEAR
UFO-CL-01-B1	UNIVERSAL MODULE CLAMP, BLACK



Property	Value
Material	300 Series Stainless Steel
Finish	Clear and Black

v1.30



THE SOLAR GUYS

6114 MO-9, PARKVILLE,
 MISSOURI, 64152

PHONE - (816) 708-5556

PROJECT NAME & ADDRESS

JUSTIN WATKINS

2013 NE BLUESTONE DR,
 LEE'S SUMMIT, MO 64064

APN #: 42400041600000000
 METER #: 24 020 588

AHJ: CITY OF LEE'S SUMMIT
 UTILITY: EVERGY- MO METRO

SYSTEM DETAILS

DC SIZE: 6.400 KW DC-(STC)
 AC SIZE: 4.640 KW AC
 (16) HANWHA Q.PEAK DUO BLK ML-G10+ 400
 (16) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE RESOURCE DOCUMENT

DRAWN DATE 1/6/2023

DRAWN BY SM

SHEET NUMBER

R-06



NanoMount™ (Decking)

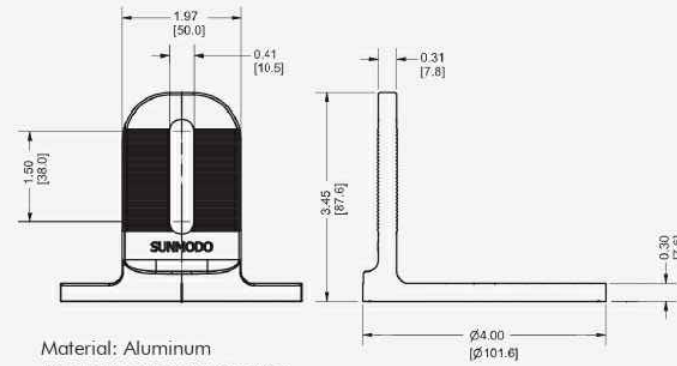


Part Description: Nano Deck Mount, Black
Part No.: K50044-BK2

Item No.	Description	Qty in Kit
1	Nano Deck Mount Assembly • Nano Deck Mount • Nano Gasket	1
2	Decking Screw Assembly • Self-Drilling Screw, #6.3 X 76 • Sealing Washer .26ID X .50X .125	4

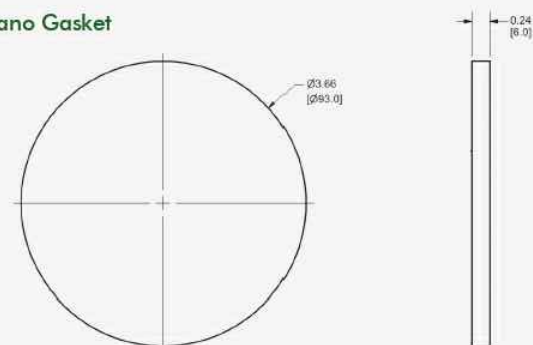
Cut Sheet

1. Nano Mount



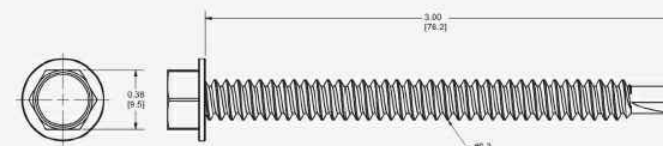
Material: Aluminum
 Finish: Black Powder Coating

2. Nano Gasket



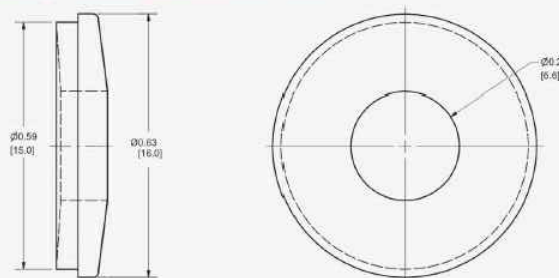
Material: USWR Silicone Foam Gasket with Adhesive

3. Self-Drilling Screw, #6.3 X 76



Material: Stainless Steel
 Finish: Clear

4. Sealing Washer .26ID X .50X .125



Material: EPDM + Stainless Steel

D10214-V001

Dimensions shown are inches (and millimeters)

Details are subject to change without notice

CONTRACTOR



THE SOLAR GUYS

6114 MO-9, PARKVILLE,
 MISSOURI 64152

PHONE - (816) 708-5556

REVIEWED FOR CODE COMPLIANCE

City Planning & Development
 Development Services
 City of Kansas City, Missouri

Jeff Lee

Jeff Lee, P.E., M.C.P.

Building Official

Date: 12/20/2022 By: mpointexter42

Case Number CRBR-2022-22465

PROJECT NAME & ADDRESS

DANIEL WEISHBACH

6441 N HOLLY STREET,
 KANSAS CITY, MO 64118
 APN #: 13520001101100
 AHJ: CITY OF KANSAS CITY
 UTILITY: EVERGY-MO METRO

SYSTEM DETAILS

DC SIZE: 10.800 KW DC-(STC)
 AC SIZE: 7.830 KW AC
 (27) Q-CELLS Q.PEAK DUO BLK ML-G10+ 400
 (27) ENPHASE IQ8PLUS-72-2-US

REVISIONS

REV	DESCRIPTION	DATE

**SHEET TITLE
 RESOURCE
 DOCUMENT**

DRAWN DATE 11/23/2022

DRAWN BY ERK

SHEET NUMBER

R-06